REMARKS

Claims 1 – 35 are pending. Claims 30 and 35 are amended. As discussed below, the claims are in condition for allowance.

Provisional Rejection of Claims 1, 2, 4, 6, 7, 16, 19, and 20 Under Double Patenting Obvious-Type

This provisional rejection of the Claims 1, 2, 4, 6, 7, 16, 19, and 20 is noted and applicants request deferral of the matter until the action is made un-provisional in accordance with MPEP §822. At that time applicants will submit arguments regarding the propriety of the rejection or take other action such as filing a terminal disclaimer.

Claims 1, 2, 4, 7, 20, 23, 29, 30, and 31 are rejected under §103(a) as being unpatentable over Sacks et al. (US 6,161,505) in view of Tuttle et al. (6,108,151)

As discussed below, the Applicants' attorney respectfully disagrees with this rejection.

Claim1 recites a servo circuit, comprising a servo channel operable to recover servo data from servo wedges that identify respective data sectors on a data-storage disk; and a processor coupled to the servo channel and operable to detect a first spin-up wedge associated with the first one of the servo wedges and then detect the first servo wedge while the disk is attaining or after the disk attains an operating speed but before the servo channel recovers any servo data from any other servo wedge.

Sacks et al. '505 discloses a controller 102 for producing a tracking or position error (PES) during read-write. See for example Col. 4, lines 37-43, and Col. 7, lines 8-25. As noted by the Examiner the servo channel and processor of Sacks et al. (Col. 6 lines 3-26) fails to teach a processor operable

to detect one of the servo wedges during or after disk spin-up without first detecting a spin-up wedge. Sacks et al. does disclose that "leading" and "middle" fields 320, 322 and 324 of Fig 3 contain sync, phase, track and sector numbers, but there is no teaching of how these data are used to find the circumferential head position initially such as during spin-up. The teaching in Sacks et al. is primarily concerned with the radial tracking error (PES) using offset bursts of position error field 126 for head position correction during normal read write operations after spin-up.

Tuttle el al. '151 discloses a disk servo system that uses a spin-up dc erase wedge field to find a servo data wedge location. Referring for example to Col. 15, lines 19-30 the Tuttle et al. '151 patent locates the servo wedges during "initial positioning of a read-write head—" by detecting a predetermined sequence of disk recorded bits "normally a long sequence of "0" bits". Such a "0" bit sequence is also known in this art as a dc erase field in which no magnetic transitions occur which might be mistaken for data or other control information.

In Tuttle et al., upon finding the dc erase, "-----the read channel can locate and acquire the remaining servo wedges" by reading phase locked data from such remaining servo wedges. Col. 15, lines 28-30. Therefore Tuttle el al. '151 does not detect a first spin-up wedge associated with the first one of the servo wedges and then detect the first servo wedge while the disk is attaining or after the disk attains an operating speed but before the servo channel recovers any servo data from any other servo wedge recited in claim 1 above.

In comparison, applicant for example discloses a servo circuit operating as described in Fig 15 beginning at Paragraph 74 that detects both a spin-up wedge and the presence of a first servo wedge by a positive detection of the preamble waveform of such servo wedge (Fig. 17, Paragraph 78) using for example the clock sampling and summing algorithm of a sinusoidal wave read from the preamble bit sequence shown in Figure 7 but in

this case after the detection of the spin-up wedge. The detection of the first servo wedge in this manner allows the storage disk to have few dc erase spin-up fields that if present take up disk storage space. (Paragraphs 78, 79, 80, and 86)

The Examiner proposes to use the teaching in Tuttle et al. '151 to modify Sacks et al. with regard to Applicant's Claim 1. However, as discussed above Tuttle et al. only discloses positioning by detecting a spin-up field and followed by phase locking onto the sector preample to recover "the remaining servo wedges". Tuttle et al. '151 Col., lines 28-30. Thus even if so modified the Sacks et al system would not detect a first spin-up wedge associated with the first one of the servo wedges and then detect the first servo wedge while the disk is attaining or after the disk attains an operating speed but before the servo channel recovers any servo data from any other servo wedge as required by **Applicant's Claim 1. Claim 1 is submitted as patentable.**

Claim 2 **recites** the servo circuit of claim 1 wherein the processor is operable to cause the servo channel to recover servo data from the first servo wedge after the processor detects the first servo wedge and before the servo channel recovers servo data from any other servo wedge. For the reasons given above claim 2 is not unpatentable from the references because any use of the teachings in Tuttle et al. would result in recovery of servo position data from other servo wedges before the detection of the first servo wedge. Tuttle et al. Col. 15, lines 28-30.

Claims 4 and 6 are likewise submitted as patentable for the reasons given in support of Claims 1 and 2.

Claim 7 recites the circuit of claim 1 wherein the processor in combination with other functions detects first and second servo wedge preambles and recovers their synchronization marks before recovering servo data from any other servo

wedge. These processes are for example described beginning in Paragraph 89. No corresponding operations are disclosed in Tuttle et al. or Sacks et al. and therefore claim 7 is allowable for these futher reasons.

Claims 20, 23 and 29 are patentable over the references for the reasons given above in regard to claim 1.

Claims 30 and 31 recite method, comprising rotating a data-storage disk having a surface from a first rotational speed to a second rotational speed over a first time period, the cirumferential position of a read head relative to a location of the disk surface being unknown for at least a portion of the first time period; during or after the first time period and while the circumferential position of the read head is unknown, detecting spin-up data, and after detecting the spin-up data, detecting servo data that identifies a sector of the data-storage disk; and recovering sector location identifying data from the detected servo data and determining the circumferential position of the read head from the recovered servo data before recovering sector location identifying data from any other sector.

As discussed above, any modification of Sacks et al. using Tuttle et al. would result in determining the circumferential position from recovery of servo sector data of other remaining servo wedges. Tuttle et al. Col. 15, line 30. Claims 30 and 31 are thus patentable over the prior art references.

Claims 3, 5, 9, 10-17, 21, 22, 24-28, 32-35 are rejected under 103(a) as unpatentable of Sacks et al. and Tuttle et al. and further in view of Leis et al. (US 5,036,408)

As discussed below, the Applicants' attorney respectfully disagrees with this rejection.

Claim 3 recites the servo circuit of Claim 1 wherein the first spin-up wedge has a zero-frequency field and the processor detects such field. As discussed above

the systems in Sacks et al. and Tuttle et al. fail to suggest the combination set forth in claim 1 and hence also in claim 3.

The Office Action cites Leis et al. for the disclosure of a zero-frequency or dc erase spin-up field. Leis et al. Abstract. However, Leis et al. in Col. 7, lines 11-31 disclose a system that after detecting a zero-frequency erase field (like in Tuttle et al. discussed above) synchronizes to a preamble for recovering sector data in a first and at least one other sector wedge before determining the validity and hence location data of the first encountered sector wedge. See for example Col. 7, lines 21-31 which describes the steps of reading the addresses of successive sectors 10 and 11 and validating addresses before the head is synchronized, in other words before confirmation that the first sector wedge has in fact been detected. Only then is the disk to head location determined. Therefore, even if the Leis et al. disclosure were used to change the systems of Sacks et al. and/or Tuttle et al., the combination of Claim 3 would not be taught or suggested, namely the first sector wedge would not be detected "before recovering servo data from any other servo wedge".

Claims 5 and 9-16 are submitted as being patentable for the reasons given above in support of Claims 1 and 3.

Claims 21, 22, 24-28 are submitted as being patentable for the reasons given above in support of Claims 1, 3 and 20.

Claims 32, 33 and 34 are submitted as being patentable for the reasons given above in support of Claims 1, 3 and 30.

Claim 35 recites a method comprising rotating a data-storage disk having a surface from a first rotational speed to a second rotational speed over a first time period, the cirumferential position of a read head relative to a location of the disk surface being unknown for at least a portion of the first time period; during or after the first time period and while the circumferential position of the read head is unknown, detecting spin-up data, and after detecting the spin-up data, detecting servo data that identifies a sector of the data-storage disk; and determining the

circumferential position of the read head from recovered servo data identifying the sector location before recovering location data from any other servo sector wherein detecting the spin-up data and servo data comprises accurately detecting a predetermined number of spin-up wedges and servo wedges before recovering location identifying data and causing the recovered location identifying data to determined the circumferential position of the read head.

Sacks et al, Tuttle et al. and Leis et al. are discussed above. The teaching in Leis et al. of recovery of data including sector addresses from more than one servo sector (see Leis et al. Col. 7, lines 1-50) does not suggest the steps in the claimed combination of detecting a predetermined number of spin-up and servo wedges before allowing location data to determine circumferential position of the read head. As stated above, Leis et al. at Col. 7, lines 18-25 recovers and validates the location identifying data of successive sectors, such as sectors 10 and 11, by processing the location addresses of multiple sectors before determining the head position and in order for tracking to begin.

In comparison Applicant detects portions of waveforms not having location data that represent the predetermined number of spin-up wedges and sector wedges, and without regard to sector location data, to determine whether the head is over sector data and only then causes recovery of location identifying data to be applied to the read head positioning circuit. See Paragraph 89. Modifying Sacks et al. and/or Tuttle et al. using the teaching in Leis et al. does not suggest detecting the predetermined number of successive spin-up and sector wedges as initial verification that servo sector data including sector location is being recovered. Amended Claim 35 is patentable.

Claim 19 is patentable in the combination recited which includes the servo circuit of claim 1 requiring the detection of spin-up and servo wedges before the servo channel recovers servo data from any other servo wedge and is not suggested by Sacks et al. and Tuttle et al. for the reasons above in support of Claim 1. The Office Action cites the further reference of Patapoutian et al. (US 5, 661,760) for its teaching of a 2T data encoding processes for data encoded onto a storage disk.

However, there is no suggestion of using such a sequence of bits for the purpose of detection of the sector preamble waveform, such as for example described by Applicant in the detection algorithm disclosed in Paragraph 79. Therefore, it would not be obvious to modify Sacks et al. and/or Tuttle et al and/or Leis et/al in view of Patapoutian et al. to provide a servo circuit having the combination of elements of Claim 19.

CONCLUSION

Claims 1-35 are in the case.

Claims 8 and 18 have been indicated as having allowable subject matter would be allowed if rewritten in independent form.

Claims 30 and 35 have been amended.

In light of the foregoing remarks, claims 1-35 are in condition for full allowance, and that action is respectfully requested.

In the event additional fees are due as a result of this amendment, you are hereby authorized to charge such payment to Deposit Account No. 50-1078.

If the Examiner believes that a phone interview would be helpful, then it is respectfully requested that Applicants' attorney, Bryan Santarelli be contacted at (425) 455-5575.

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Respectfully submitted,

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